

Figure 1

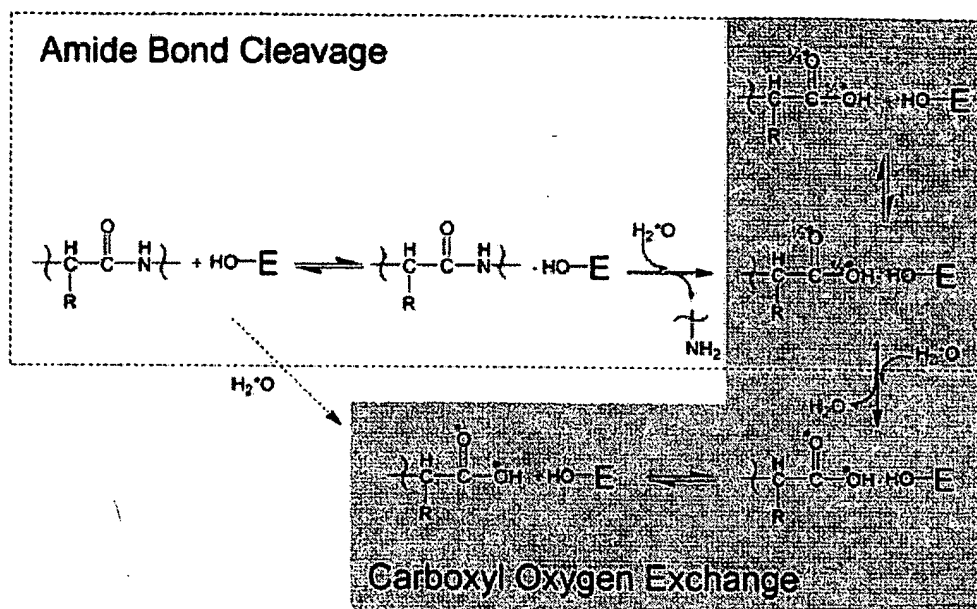


Figure 2 Dissection of Incorporation of Two Stable Isotopes during Proteolysis

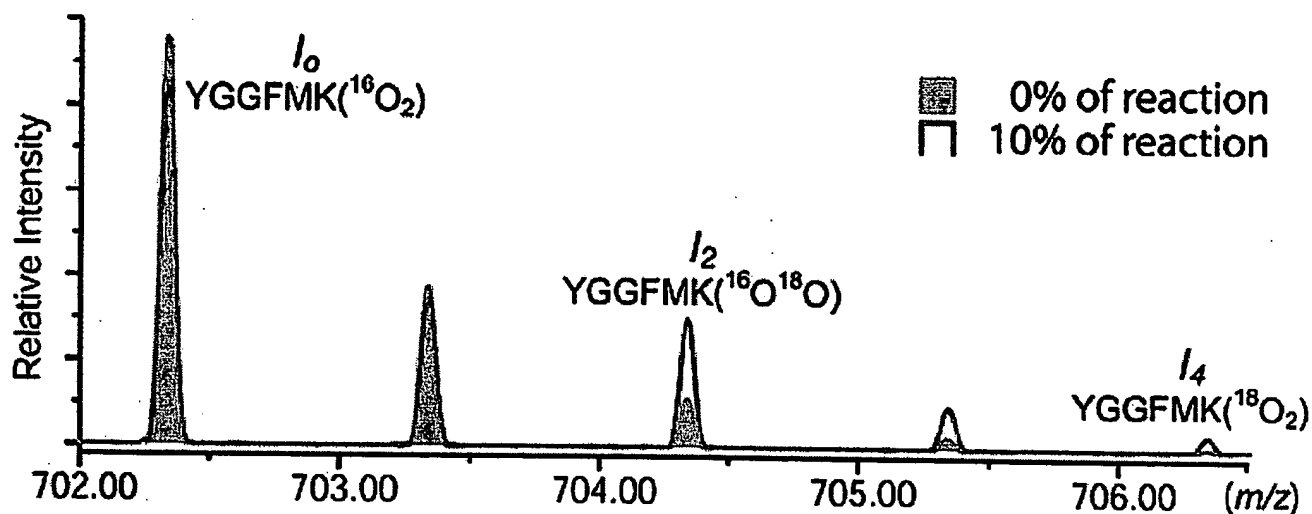


Figure 3 MALDI-FT-ICR spectra of YGGFMK at 0% and 10% conversion of the $^{16}\text{O}_2$ -peptide. Two spectra were normalized according to a total concentration of $^{16}\text{O}_2$ -peptide, $^{16}\text{O}^{18}\text{O}$ -peptide, and $^{18}\text{O}_2$ -peptide.

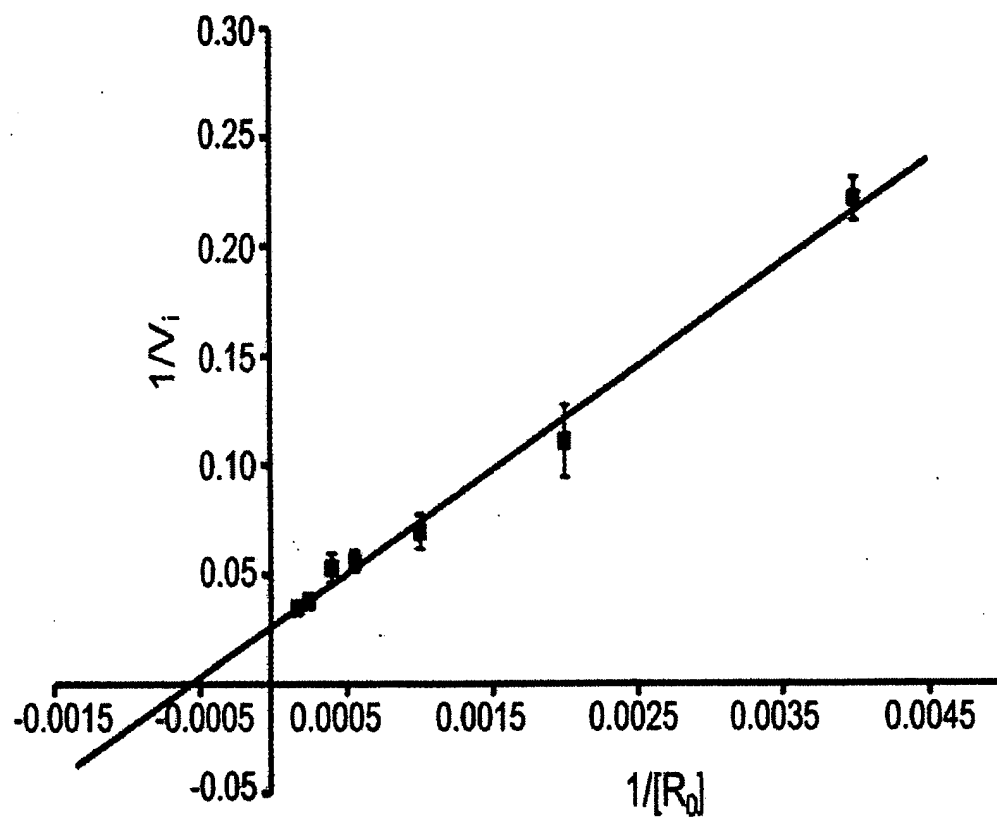


Figure 4 Double reciprocal plot of $1/v_i$ vs $1/[R_0]$ for trypsin-catalyzed ^{16}O -to- ^{18}O exchange reaction of YGGFMR.

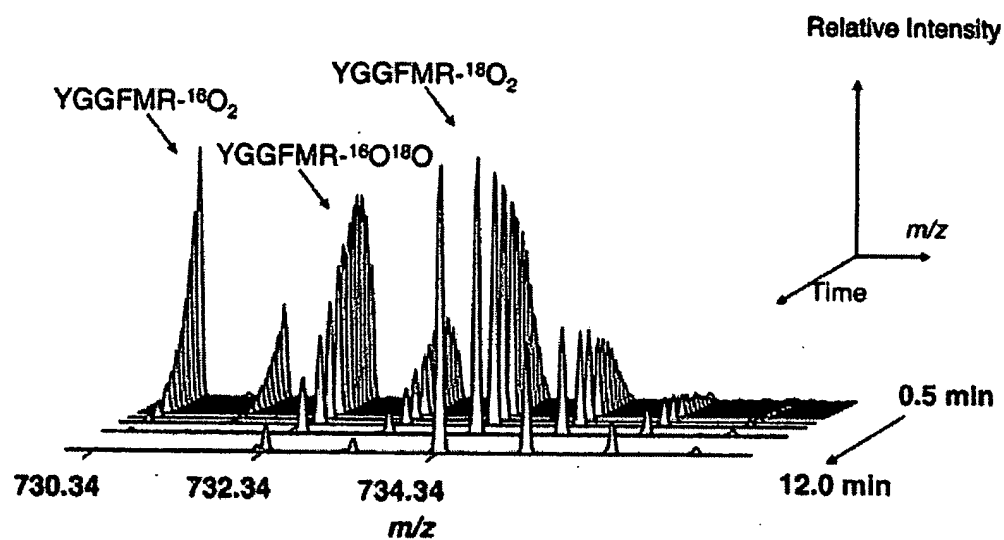


Figure 5 Sequential exchange of two carboxyl oxygens by trypsin catalysis. Inset indicates three axes.

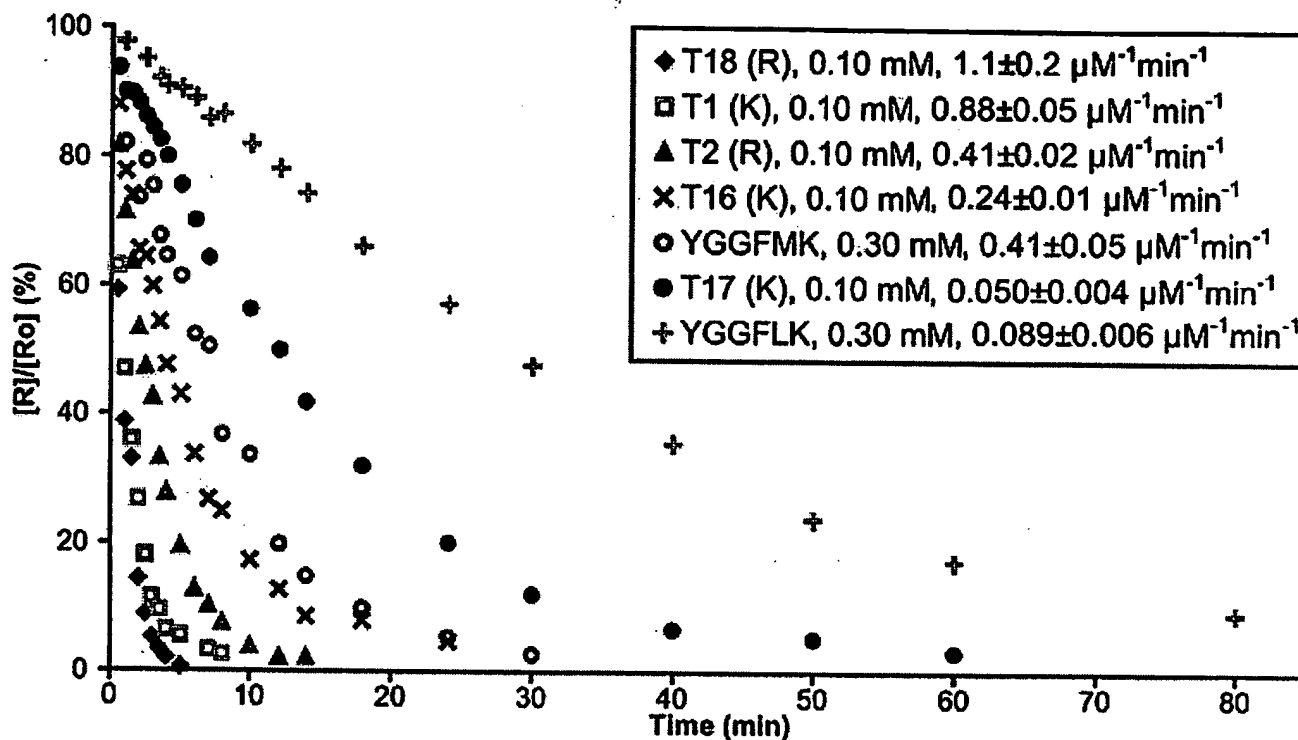


Figure 6 Simultaneous determination of pseudo first-order decay of multiple truncated peptides($^{16}\text{O}_2$). They are YGGFMK($^{16}\text{O}_2$), YGGFLK($^{16}\text{O}_2$), and five $^{16}\text{O}_2$ -peptides from apomyoglobin. R's and K's in brackets represent the peptide P_1 residues. Rate constants (k_{cat}/K_M 's) in the inset were calculated, using k_{cat}/K_M of YGGFMK as an internal standard. Data were based on a single experiment.

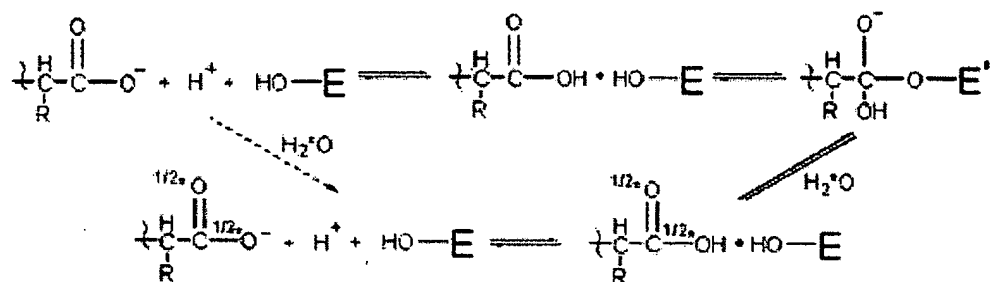


Figure 7 Sequential Exchange of Two Carboxyl Oxygens by Serine Protease: Incorporation of the First Oxygen Isotope

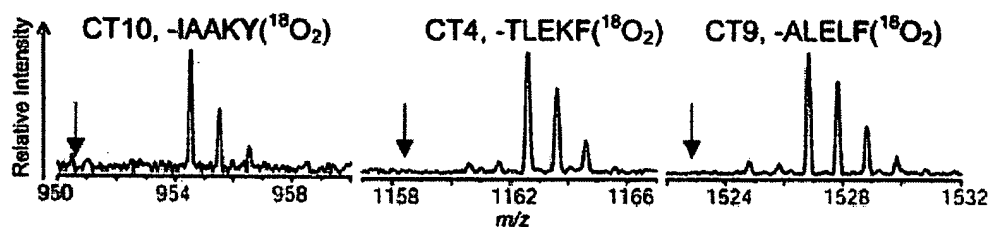


Figure 8 MALDI FT-ICR spectra of peptides $^{18}\text{O}_2$ -encoded by chymotrypsin. The last five amino acid residues to the carboxyl termini for three chymotryptic peptides are shown. Arrows point to would-be positions for the peptides with ($^{16}\text{O}_2$).

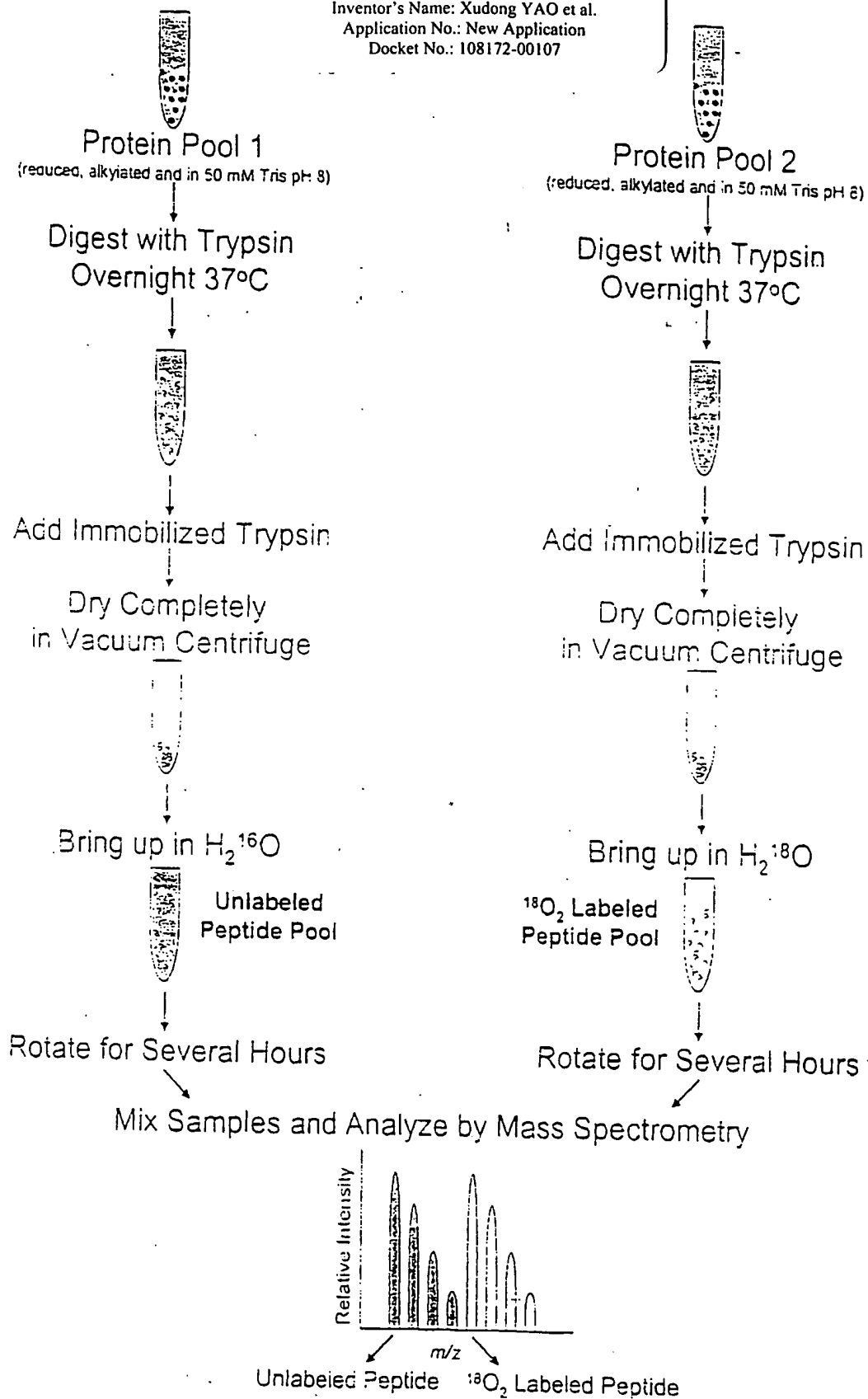


Figure 9

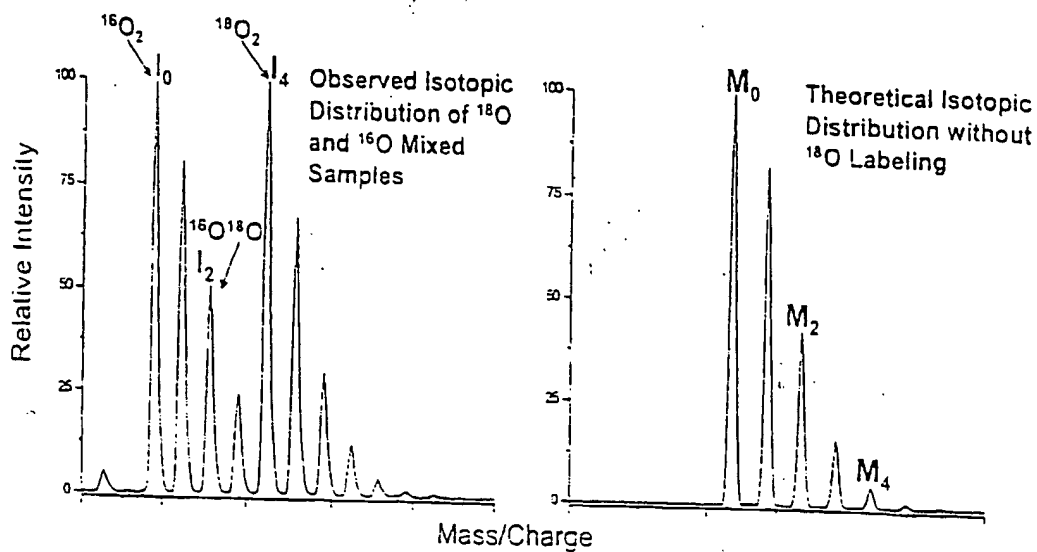


Figure 10